

EMERGENCY PLANNING INFORMATION

TO NEIGHBORS
OF SALEM
GENERATING STATION

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NEW JERSEY

**TO NEIGHBORS
OF SALEM
GENERATING STATION**



Dear Resident of New Jersey:

This brochure is part of an extensive, on-going program by the State of New Jersey Office of Emergency Management, the Federal Emergency Management Agency, and the Public Service Electric & Gas Company to ensure the safety of persons living in the vicinity of the Salem Generating Station. The actual danger posed by the plant is very small. However, since radioactive materials are involved in the production of electricity at the Salem Station, a Radiological Emergency Response Plan (RERP) has been developed to provide area residents with maximum protection in the case of a radiological accident. This brochure gives information on the Salem Station and the Radiological Emergency Response Plan.

I ask you to read this brochure now and then place it with your other important papers for future reference.

It is the hope of all the agencies involved that you will find this brochure informative and enlightening.

Sincerely,

A handwritten signature in black ink, which appears to read "Brendan Byrne". The signature is written in a cursive style with a long, sweeping underline that extends to the left and then loops back under the name.

Brendan Byrne
Governor
New Jersey

What is the purpose of this pamphlet?

This pamphlet is provided to you, the neighbors of Salem Generating Station, to give you information about the emergency plans which would be implemented in the unlikely event of a nuclear power plant emergency.

Why do we need emergency plans?

The oil, chemical and transportation industries all have emergency plans. So does the nuclear industry. Should a serious accident ever occur at the Salem Station, the emergency provisions which we will briefly explain have been established to minimize or prevent any public health consequences.

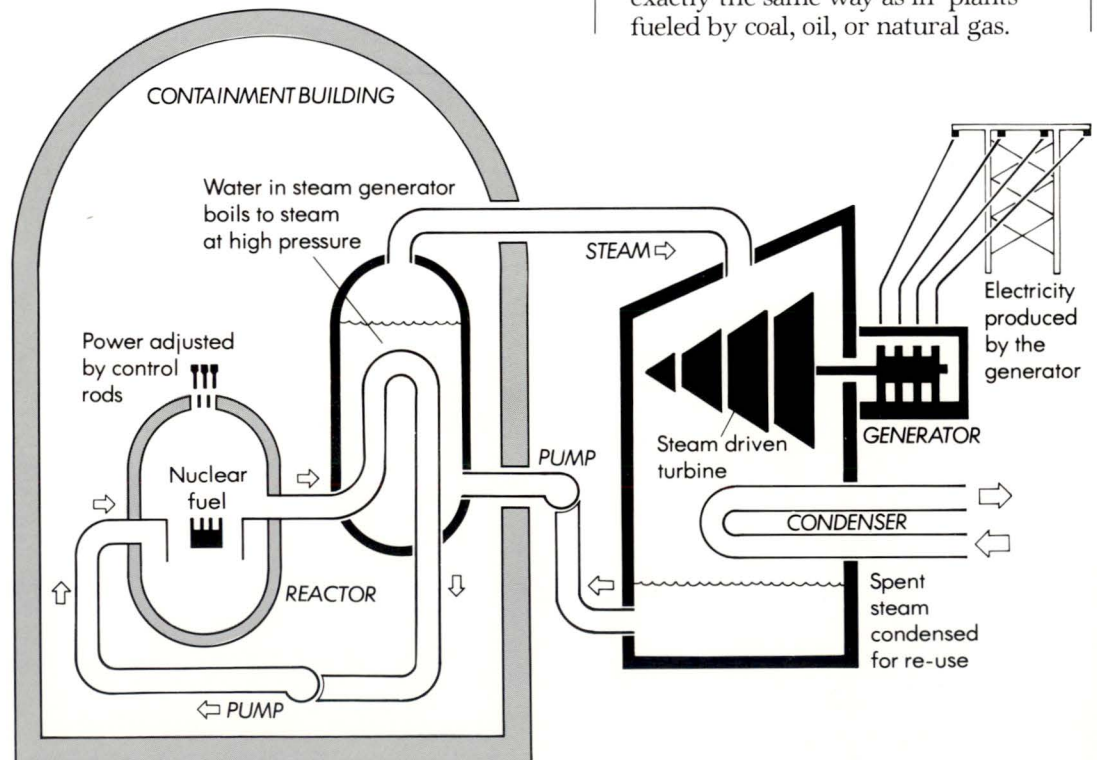
The Three Mile Island accident showed that when a serious nuclear accident occurs, there is a considerable amount of time between the occurrence of the accident and the potential for a release of radioactivity which could reach the public. This time allows a wide variety of protective actions to be taken. Recent changes to Federal regulations require utilities and state and local governments to develop or improve plans to protect people in what they call the emergency planning zones. These zones are described on page 6.

How does Salem Station work?

In a "fossil fueled" power plant, coal, oil, or gas is burned in a furnace to provide heat to change water to steam. The steam, under high pressure, rushes against the blades of a machine called a turbine—much like wind passing through a windmill. The turbine turns a large magnet inside a coil of wire, and electricity is generated.

At a nuclear power plant like Salem Station, the furnace mentioned above is replaced by a nuclear reactor. Heat is produced in the reactor by splitting atoms.

Uranium, because it is the only substance found in nature whose atoms split readily, is the fuel used in a fission reactor. When an atom of uranium is hit by a minute particle called a neutron, the result is fission. This fission releases lightweight atoms, energy as heat, and several new neutrons. The supply of neutrons in the nuclear power plant's reactor is controlled to maintain the fission process (chain reaction). The heat produced is used to turn water into steam. A nuclear plant uses this steam to produce electricity in exactly the same way as in plants fueled by coal, oil, or natural gas.





Is Salem Station safe?

Safety is the primary consideration in the design of all nuclear power plants. At the first sign of an abnormal operation, automatic safety devices will shut the reactor down. The Salem Station reactors, like those in all commercial nuclear power plants, have many overlapping safety features. Even if several should fail, there would still be back-up systems to assure the safety of the plant.

Salem Station and all other nuclear power units have an outstanding safety record. After 25 years of operation of commercial nuclear power plants, and despite what you may have read about

the Three Mile Island accident, no member of the public has ever been exposed to any significant radiation.

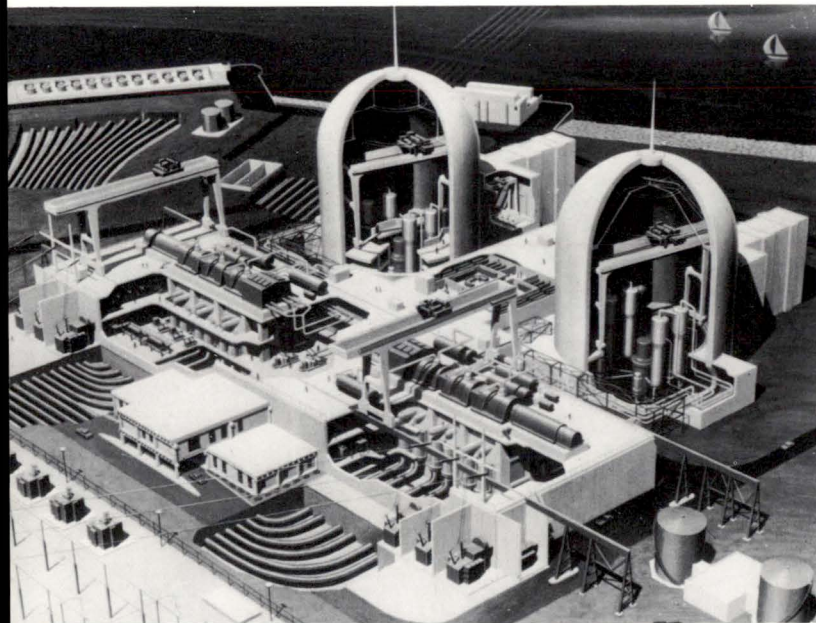
The nuclear power industry remains the most strictly regulated industrial enterprise in United States history.

No energy system is perfectly safe. Nuclear power plants are designed to the highest quality standards. Many layered safety systems are incorporated to prevent any accident that could cause the release of radioactivity and to minimize the consequences should one occur. However, accidents that can result in the release of substantial quantities of radioactivity are theoretically possible.

What about the possibility of a nuclear explosion?

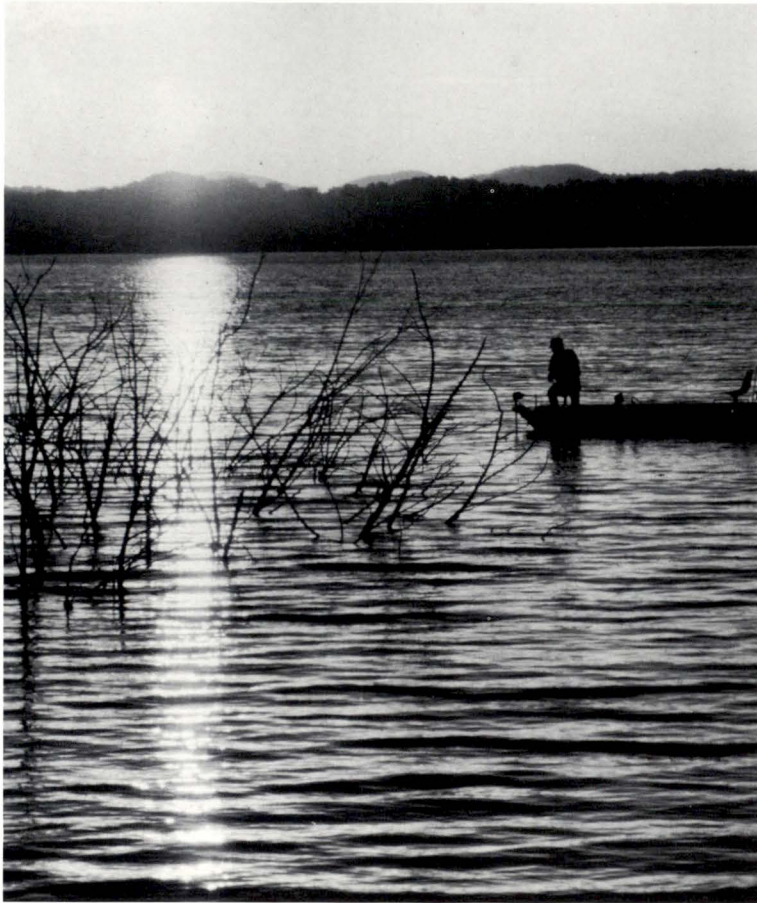
Power reactors cannot undergo a nuclear explosion

The amount of fissionable uranium needed for an explosion must be very concentrated and then must be rapidly forced together into a compact shape. A power reactor contains only 3 percent fissionable material. The remaining 97 percent of the fuel is material that does not fission readily. Instead it tends to stop the nuclear reaction, and acts as a safety feature.



What is Radiation?

Radiation is energy in motion. It is invisible, tasteless and silent—and perhaps this is the reason that some believe there is something mysterious about radiation. There isn't; we know a great deal about it. Heat, light and radio waves are types of radiation.



TYPICAL RADIATION EXPOSURE LEVELS

Natural Background Radiation	Millirems Per Year	Man-made Sources of Radiation	Millirems
From cosmic rays (the sun)	35	From coast-to-coast jet flight	4
From air	5	From color television	6
From building materials	34	From one chest X-ray	50
From food	25	From living within a 50-mile radius of a nuclear power plant	0.002 (per year)
From ground	11		

We have been living with radiation from the beginning of time. Radiation comes from the air we breathe, food we eat, water we drink, the home we live in, and the earth under our feet. All of this radiation occurs naturally. Other radiation is man made such as X-rays used in medical and dental diagnosis and therapy.

The radiation from the operation of a nuclear plant is no different from our natural "background" radiation. It consists of a stream of particles or rays which come from the centers of some types of atoms. There are three types of radiation which need to be described: alpha particles which travel about an inch in air and can be stopped by a sheet of paper, beta particles which travel a few feet and can be stopped by an inch of wood, and gamma rays which travel a greater distance and can be stopped by a dense material such as lead or concrete shielding. Radiation occurs in a nuclear reactor as a result of the fission process.

Low-level radiation can be measured in millirems, an accurate unit of measure of radiation's biological effect on man. One thousand millirems equals one rem.

The average resident of New Jersey or Delaware is exposed to approximately 125 millirems per year from natural sources. Man-made sources such as dental and medical X-rays can contribute, on the average, another 90 millirems per year. These amounts are not considered of any significance to health. In fact, the additional exposure to radiation experienced by a person living immediately outside a typical nuclear plant property only rarely exceeds 1 millirem per year.

To put the risk of radiation in perspective, consider these facts. The average American receives 6 millirems a year from watching color TV for three hours a day or 3000 times more than from a plant. The average jet plane passenger receives 4 millirems from a round trip between New York and California or 2000 times more than from a plant.

The truth is that a nuclear plant adds so little radiation to the environment that it is difficult even to measure it against the natural background radiation.

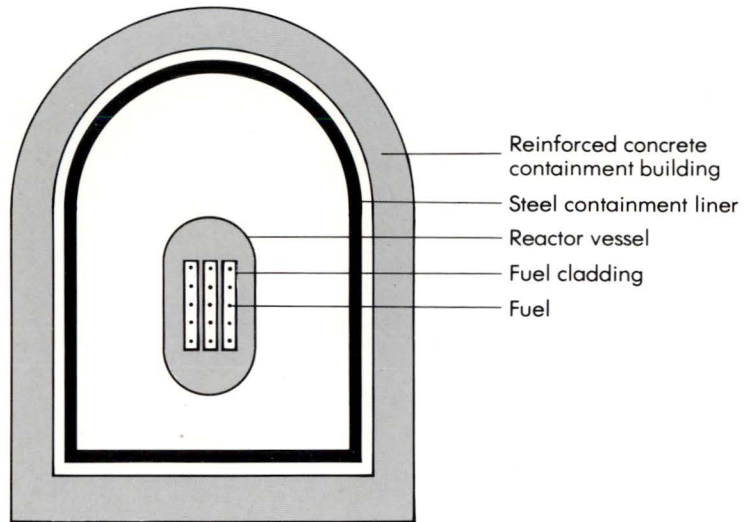
How does radiation affect us?

Any effect from radiation will depend upon the nature and energy level of the particles and rays to which you are exposed, the length of time you are exposed to them, how much of your body is exposed and how much radioactive material is collected in your body.

When emissions from radioactive substances enter the human body in large enough amounts they can damage cells by ionizing (removing the electrons from) atoms. If the damage is great due to an unusually large amount of radiation, adequate repairs may be impossible and the consequences severe. If the damage is slight, or takes place slowly, the body can usually make repairs.

How is radiation detected?

Although radiation is invisible, tasteless, odorless, and silent, it can be detected and measured by many types of instruments. These instruments allow federal, state and utility personnel to continuously monitor radiation levels around Salem Station. In the event of an accident, these monitoring activities would be greatly increased to obtain accurate information in any area that might be affected.



How is the public protected from radiation in a nuclear power plant?

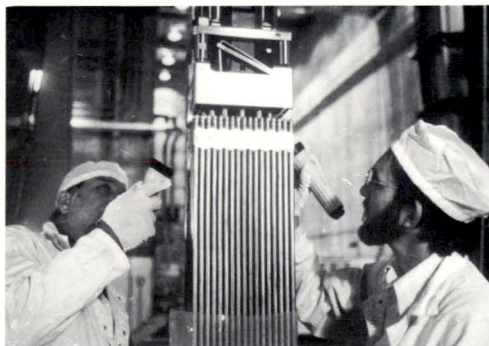
The main idea behind the power plant design is to keep the radiation inside the plant. This involves placing barriers between the radiation and human beings.

The barriers at Salem Station are:

1. **Containment Building.** This is a leak-tight, concrete and steel building. Its walls are made from 4½-foot-thick reinforced concrete lined with steel plate, which is attached to a 16-foot-thick reinforced concrete floor. More than just a building, the containment completely encircles the reactor,

steam generators and pumps and goes below-ground as well as above.

2. **Reactor Vessel and Steel Piping.** The reactor vessel, which holds all the fuel assemblies, has 8½-inch-thick steel walls. The piping is made completely from thick-walled stainless steel.
3. **Fuel Cladding.** This is a 12-foot-long sealed metal tube made of zirconium alloy. These tubes, called rods, contain fuel pellets.





What happens should radioactivity be released?

To provide a basis for emergency planning, Federal authorities analyzed possible releases of radioactive material to the environment. This detailed analysis, which took into account the effects of a radioactive release from a serious accident, resulted in the establishment of predesignated areas surrounding a nuclear power plant. These areas are called emergency planning zones. Two such zones were established.

The first zone is the plume exposure zone and is the area within a 10-mile radius from the station. Within this area the first concern of emergency

agencies is to protect the public from exposure to direct radiation from the plant or from radioactive material which may have been released into the air or water.

It is for this area that protective actions such as sheltering and evacuation may be used in the event of a potential release or actual release of radioactive material. These actions are explained on pages 7 and 8 and on the enclosed placard.

The second zone is the ingestion exposure zone and is the area within a circle having a radius of 50 miles. The station is at the center of the circle. Within this area the consumption of potentially contaminated foods such as

How are events or accidents classified and what actions may have to be taken during each?

Four classifications are used by the plant emergency response personnel to notify state emergency management officials and the public of the severity of an emergency at Salem Station. A description of these classifications, as well as utility, state, local and public response actions, are outlined below.

CLASSIFICATION	DESCRIPTION AND EXAMPLE	UTILITY ACTION	STATE ACTION	COUNTY AND LOCAL ACTION	PUBLIC ACTION
Notification of an Unusual Event	A Notification of an Unusual Event would be required by minor events which are often non-nuclear, such as the injury to a plant worker, an automatic plant shutdown or potentially severe weather conditions.	<ol style="list-style-type: none"> 1. Evaluate situation. 2. Notify state. 	<ol style="list-style-type: none"> 1. Acknowledge utility information. 2. No further action. 	No action.	No action.
Alert	An Alert is required by events which are either adversely affecting or may adversely affect reactor safety. Examples of such conditions would be the failure of a component in a safety system or an event outside the plant such as a tornado or hurricane. Problems leading to an Alert, ordinarily, would not cause a release of radioactivity although the release of small quantities is possible.	<ol style="list-style-type: none"> 1. Evaluate situation. 2. Notify state. 3. Activate the Onsite Emergency Center. 4. May activate the Offsite Emergency Center. 	<ol style="list-style-type: none"> 1. Acknowledge utility information. 2. Notify local authorities. 3. Partially activate State Emergency Operations Center. 4. Put Radiation Monitoring teams on standby. 	<ol style="list-style-type: none"> 1. Acknowledge state information. 2. No further action. 	No action. Public may be provided information by state over EBS radio.
Site Area Emergency	A Site Area Emergency designates problems such as serious leakage of water from the reactor coolant system, damage to stored used fuel, or a fire in a safety area or in a safety system. Releases of radioactivity are possible or may already be occurring.	<ol style="list-style-type: none"> 1. Evaluate situation. 2. Notify state. 3. Activate the Onsite Emergency Center. 4. Activate the Offsite Emergency Center. 	<ol style="list-style-type: none"> 1. Acknowledge utility information. 2. Notify county authorities. 3. Activate Emergency Operations Center and mobilize the state's emergency response organizations. 4. Provide information to the public over the EBS radio stations. 	<ol style="list-style-type: none"> 1. Acknowledge state information. 2. Activate Emergency Operations Center. 3. Mobilize local emergency response organizations. 	The public should tune to EBS radio station. (See enclosed placard.) State officials will provide information over EBS on what actions should be taken.
General Emergency	A General Emergency is declared for a serious condition such as an accident where there exists a clear potential for damage to the fuel in the reactor. Releases of radioactivity are possible or may already be occurring.	<ol style="list-style-type: none"> 1. Evaluate situation. 2. Notify state. 3. Notify counties directly. 4. Activate the Onsite Emergency Center. 5. Activate the Offsite Emergency Center. 			

milk or fresh vegetables is the main concern of emergency agencies. Protective actions for this emergency planning zone may include: restricting consumption of water (except bottled water) and unprocessed milk and washing fresh fruits and vegetables.

What happens at Salem Station if an accident should occur?

Assessment of an accident and evaluation of the possibility of a release of radiation is the responsibility of the staff at Salem Station. In accordance with federal guidelines, they determine the appropriate classification.

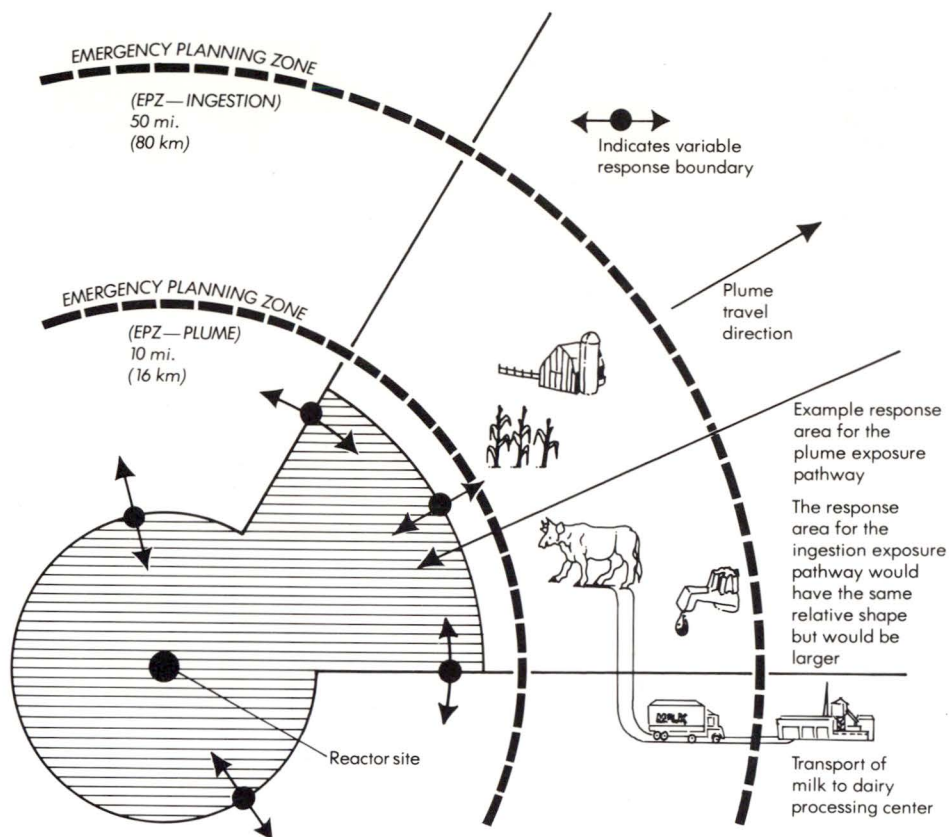
What happens next?

The station Emergency Duty Officer immediately notifies the Nuclear Regulatory Commission and New Jersey and Delaware officials who are responsible for implementing the state's radiological emergency plans.

Following this notification procedure, and depending on the severity of the accident, municipal, county, state and federal emergency personnel would be mobilized, if necessary, to protect the public.

How will I be notified?

Area residents within the 10-mile plume exposure zone will be notified by a combination of sirens and radios, and police and fire department personnel using public address systems. The siren sound would be distinctive with each cycle lasting 3 to 5 minutes. Upon hearing an alert, you should turn to a radio station listed on the enclosed placard. The Coast Guard and marine police will alert boaters.



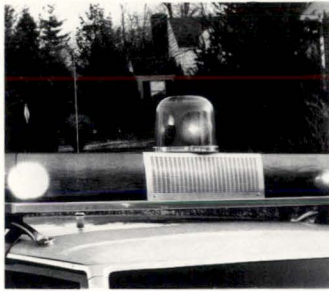
Is that all I need to do at first—turn on a radio?

Yes. The radio stations listed on the enclosed placard are members of the Emergency Broadcast System. (Please post this card within easy reach, perhaps attach it to the side of your refrigerator.)

The Emergency Broadcast System (EBS) is used by local agencies to inform the public in New Jersey and Delaware of severe weather conditions and other events that might threaten their health, safety or well-being. The Emergency Broadcast System allows state officials to interrupt regular radio programming with emergency information and repeat the broadcasts as often as required. By tuning to this system you will have the most timely and accurate information concerning the accident and how it may affect you.

Do not call the police or fire departments for information. They will need to keep their phone lines clear for emergency phone calls.

You are also asked to limit the use of your telephone to essential calls to ensure that the telephones are available for emergency calls.



What type of information or instructions will I receive over the radio?

The type of instructions or information you will receive will depend on the area in which you live, the manner in which any radiation is released, the amount released and the direction and speed of the wind. For instance, should a significant release of radioactive material to the air occur and be carried away by a relatively slow wind, people within the area downwind from the plant might be directed to:

Take Shelter. The take shelter directive would require that you:

1. Go indoors, close external doors, windows, and turn off air condi-

tioners and all ventilation leading outdoors.

2. Listen to your radio for further instructions. *Do not evacuate unless an order is given.*

Evacuate. You may be advised to evacuate.

Once you are ordered to evacuate, you should:

1. Close all doors and windows, turn off stoves, heaters, fans and air conditioners.
2. Place a white piece of cloth or any other similar white object on your mailbox or on the front door so that it is clearly visible.
3. Consult the card attached to the back of this booklet for evacuation routes.
4. Follow radio instructions to evacuate to a specific Congregate Care Shelter.

What plans have been made for school children?

Special care has been taken in preparing New Jersey's emergency plan to protect school children. At the beginning of the school year, the parents will receive a letter outlining the features of the school evacuation plan.

The plan contains the following provisions:

- If an accident occurs, school officials will be contacted by the local emergency management organization.
- The children will be assembled, counted, and transported on school buses to a specific Reception Center.
- Once the school buses arrive at the designated Reception Center for that school, the children will be counted once again, and cared for until their parents arrive.

It is important for parents to read and retain the letter containing details of the evacuation plan for school children. It specifies the Reception Center their children will be taken to, information on how to pick up their children once they have arrived there, and emergency numbers to call for additional information. Should parents lose this letter, copies are readily available at the school.



What do I do if I do not have transportation?

Those unable to drive or without personal means of transportation should complete and return the card insert in the back of this pamphlet. Agencies maintain rosters of individuals with special transportation needs and will provide help. Please mail this card as soon as possible so that assistance can be provided during an emergency.

Where are New Jersey's Congregate Care Shelters located?

New Jersey's designated Shelters are:

1. Salem County Community College
Hollywood Avenue
Carneys Point
2. Lafayette-Pershing Elementary School
Shell Road
Carneys Point
3. Paul W. Carleton Elementary School
East Maple Avenue
Penns Grove
4. Penns Grove High School
Harding Highway
Carneys Point
5. Penns Grove Middle School
County Road (East Maple Avenue)
Penns Grove
6. Field Street Elementary School
Field Street
Penns Grove
7. Delaware Ordnance Shop
78 Din Area Main Shop
Central Road
Oldman
8. Kingsway Regional High School
Kingsway Road
Swedesboro



Woodstown High School

- 9* Salem County Vocational-Technical Schools
Woodstown-Salem Road
Woodstown
10. Woodstown High School
East Avenue
Woodstown
11. Mary S. Shoemaker Elementary School
E. Millbrooke Avenue
Woodstown
12. Woodstown Middle School
Lincoln Avenue
Woodstown
13. Glassboro College
Route 322
Glassboro
14. Arthur P. Schalick High School
Elmer-Centerton Road
Route 553
Pittsgrove (Elmer)
15. Cumberland Regional High School
Silverlake Road
Upper Deerfield
16. Bridgeton High School
West Avenue
Bridgeton
17. Cherry Street Elementary School
Cherry Street
Bridgeton
18. Landis Junior High School
61 West Landis Avenue
Vineland
19. Vineland High School
2880 East Chestnut Avenue
Vineland
20. Memorial Junior High School
Fifth and Broad Street
Millville
21. Millville Senior High School
Wade Boulevard
Millville
22. Holly Heights School
2515 East Main Street
Millville

*For emergency workers and their families only.



What do I take to the Congregate Care Shelter if I'm evacuating?

Avoid excess baggage. Suggested items to take are:

Personal items:

- a. Prescription medicines and prescriptions
- b. Soap and towels
- c. Shaving articles
- d. Sanitary supplies
- e. Toothpaste and toothbrushes
- f. Toilet paper
- g. Eyeglasses and dentures
- h. Important personal effects

Children and infant's supplies:

- a. Disposable diapers and powder
- b. Bottles
- c. Milk/formula (dry or canned only)
- d. Favorite go-to-sleep toy

Other supplies if readily available:

- a. Flashlight
- b. Portable radio/batteries
- c. Plastic or paper bags
- d. Hand tools (for car repairs)

Are Take Shelter and Evacuate the only protective actions I might have to take?

No, you may be asked to:

Restrict your Movement. During an emergency, officials may ask you to avoid certain areas. Officials may erect barriers, roadblocks, etc., to control access to evacuation or take-shelter areas. The objective of Access Control is to prevent the public from inadvertently entering potentially contaminated regions.

Restrict Consumption of Food, Milk and Water. You may be asked to restrict your consumption of water, milk or fresh vegetables until the possibility of contamination is over.

Assuming an area is evacuated, how will homes be protected?

Access to and from evacuated areas will be controlled by state and local law enforcement forces. Police and fire crews will constantly patrol evacuated areas to protect property. As a first protective step, all doors and windows should be locked by homeowners prior to departure.

I'm a farmer—what do I have to do?

Because a major accident at Salem Station might have a significant impact on your activities, a special brochure has been prepared to provide detailed information. To receive this publication, please mail the attached card as soon as possible or send a letter to:

Farmer's Information
P.O. Box 570
Newark, NJ 07101

Attn: Emergency Preparedness—15A



How do we know that this emergency plan will work?

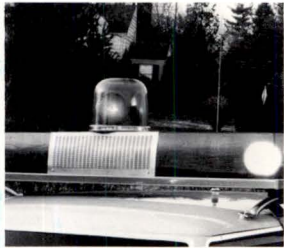
The State and Utility emergency plans are jointly tested in a major exercise every year. Past exercises have been observed by federal officials and have demonstrated that the plans can protect the health and safety of the public. They are regularly reviewed and revised to take into consideration changes to the emergency organizations and lessons learned during the yearly exercise.

Is this plan only for radiological emergencies?

Federal and state officials are constantly improving methods for dealing with emergencies, whether the emergencies are caused by natural or man-made hazards (floods, storms, train derailments). There is, however, a real need for us as individuals to think about how we should act, and what we should do in an emergency. Our hope is that this pamphlet has prompted this type of thinking. Remember, although the emergency plan outlined here is directed toward a nuclear accident, the concepts, emergency equipment and training provided for these plans can be used to cope with any type of emergency.

WHAT TO DO

IN CASE OF A NUCLEAR ACCIDENT



1 LISTEN FOR 3 TO 5 MINUTE SIREN BLASTS AND HORNS

Police, fire department and Coast Guard personnel using public address systems will provide basic instructions.



2 TURN ON YOUR RADIO

The radio stations listed below will provide the most up-to-date information concerning what to assemble, what to do and where to go.



3 IF ORDERED TO TAKE SHELTER

Remain in your home, close all doors and windows, turn off air conditioners, and use phone only during a personal emergency.

WDEL 1150(24 hrs.)	WNNN-FM 101.7	WMVB-FM 97.3(24 hrs.)
WSTW-FM 93.7(24 hrs.)	WSNJ 1240	WMVB 1440
WJIC 1510	WSNJ-FM 107.7	WWBZ 1360

4 IF YOU ARE ORDERED TO EVACUATE

Bring these items with you

Clothing, medicines, baby food, blankets, pillows, food, sanitary supplies, portable radio, flashlight, first aid kit, batteries.

Additional information

Handicapped—non ambulatory—register with your local fire department for assistance.

If school is in session children will be transported to a safe area and cared for until you arrive. Their safety is first and foremost. Please don't go to schools to pick up children.

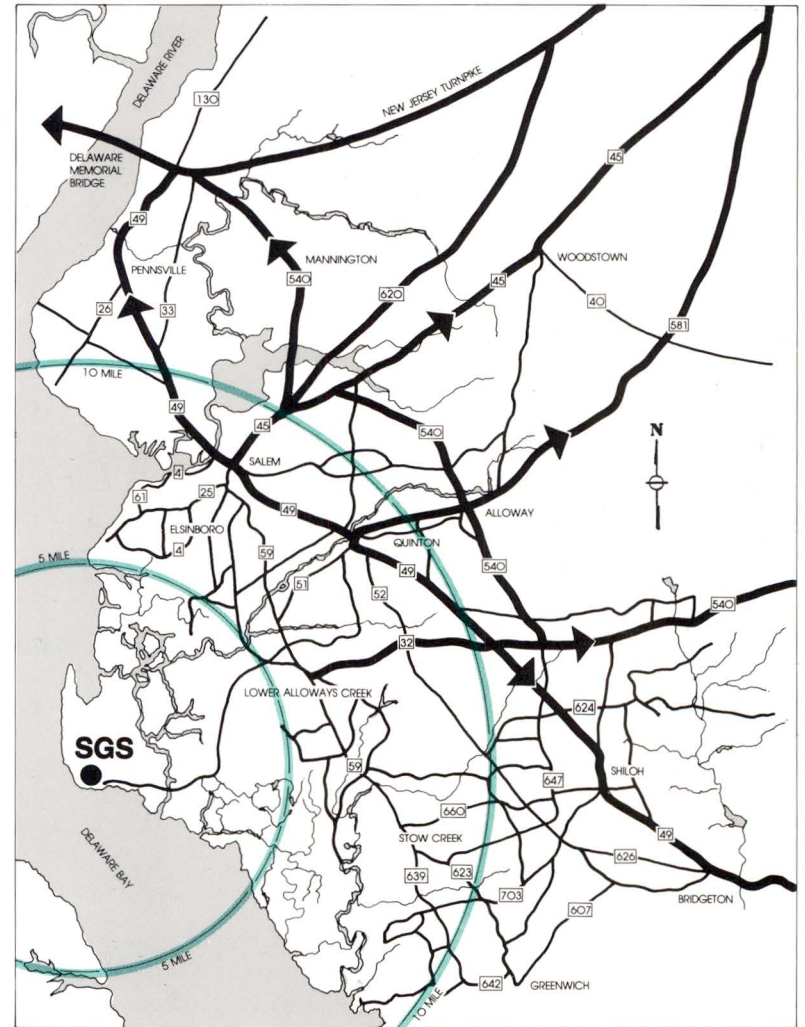
Follow police instructions, stay tuned to your radio and remain calm.

Check these ✓

- Shut off water, electricity, gas
- Close all blinds, draperies
- Check your home for security
- Lock the doors
- Check your neighbor

WHERE TO GO

EVACUATION ROUTES





FIRST CLASS
U. S. POSTAGE
PAID
NEWARK, NJ
PERMIT NO. 54

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